

HUBR-1165 (10023593)

IN THE CLAIMS

1-22 (canceled)

23. (currently amended) A process for the adhesive-free production of polymeric components, including the steps of:

- (a) preparing a polymeric substrate which, on at least one surface, has depressions forming at least one of micro- and nanochannel structures,
- (b) applying, by uniform pressure in the range of from 0.1 to 1000 kg/cm² extending over said surface, a polymeric covering to said surface,
- (c) slowly heating said substrate, with said covering applied by pressure, to a heating temperature which is at least as high as the glass transition temperature of at least one of said substrate and of said covering and holding the substrate with the covering within $\pm 3^{\circ}\text{C}$ of said heating temperature for at least 15 minutes, for the bonding thereof, and
- (d) cooling the substrate for up to 30 seconds down to a temperature of about 40°C.

24. (previously presented) The process as claimed in claim 23, wherein the polymeric substrate and the polymeric covering are selected from the group consisting of acrylic polymers, polycarbonates, polystyrenes, and also copolymers and mixtures of these.

25. (canceled)

26. (previously presented) The process as claimed in claim 23, wherein the substrate has depressions with at least one of a width depth within the range from 10 nm to 2 mm.

HUBR-1165 (10023593)

27. (previously presented) The process as claimed in claim 26, wherein the substrate has depressions with a width or/and depth within the range from 100 nm to 1 mm.

28. (previously presented) The process as claimed in claim 27, wherein the substrate has depressions with a width or/and depth within the range from 1 μ m to 500 μ m.

29. (previously presented) The process as claimed in claim 23, wherein substrate and covering are selected from among polymeric materials of the same type.

30. (previously presented) The process as claimed in claim 23, wherein at least the covering is selected from among optically transparent materials.

31. (previously presented) The process as claimed in claim 23, wherein the polymeric covering and the substrate are combined at a pressure of from 0.2 to 20 kg/cm².

32. (previously presented) The process as claimed in claim 31, wherein the pressure applied is 2 kg/cm².

33. (previously presented) The process as claimed in claim 23, wherein the duration of heating is within the range from 0.5 to 3 h.

34. (previously presented) The process as claimed in claim 23, wherein the heating temperature is not more than 5°C above the glass transition temperature.

35. (canceled)

36. (previously presented) The process as claimed in claim 35, wherein the substrate and covering present thereupon are held within the region of the heating temperature for a period of at least 30 min. HUBR-1165 (10023593)

37. (canceled)

38. (canceled)

39. (canceled)

40. (canceled)

41. (canceled)

42. (canceled)

43. (canceled)

44. (canceled)

45. (previously presented) The process as claimed in claim 24, wherein the polymeric substrate and the polymeric covering are polymethyl methacrylate polymers.

46. (currently amended) The process as claimed in claim 24, wherein the polymeric covering is a polymethyl methacrylate polymer A process for the adhesive free production of polymeric components, including the steps of:

(a) ~~preparing a polymeric substrate which, on at least one surface, has depressions forming at least one of micro- and nanochannel structures,~~

HUBR-1165 (10023593)

(b) — applying, by uniform pressure in the range of from 0.1 to 1000 kg/cm² extending over said surface, a polymeric covering to said surface;

(c) — slowly heating said substrate, with said covering applied by pressure, to a heating temperature which is at least as high as the glass transition temperature of at least one of said substrate and of said covering and holding the substrate with the covering within $\pm 3^{\circ}\text{C}$ of said heating temperature for at least 15 minutes, for the bonding thereof, and

(d) — cooling the substrate for up to 30 seconds down to a temperature of about 40°C .